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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,078	12/11/2003	Kenneth S. Murphy	MP333	7966

7590 07/03/2007  
ECKERT SEAMANS CHERIN & MELLOTTT, LLC  
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EXAMINER
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ROE, JESSEE RANDALL

ART UNIT	PAPER NUMBER
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1742

MAIL DATE	DELIVERY MODE
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07/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/734,078	Applicant(s) MURPHY, KENNETH S.	
	Examiner Jessee Roe	Art Unit 1742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Claims Status***

Claims 11-17 are pending wherein claims 1-10 are canceled and claim 17 is new.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishihata et al. (JP 2000-042755) in view of Warnes et al. (US 5,989,733).

Claims 11-16 are rejected on the same grounds as stated in the Office Action of 8 November 2006.

Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gell et al. (US 4,116,723) in view of Warnes et al. (US 5,989,733).

In regards to claim 11, Gell et al. ('723) disclose a nickel-base superalloy (col. 4, line 63 – col. 5, line 6) . The table below compares the alloy composition of Gell et al. ('723) with that of the instant invention.

Element	From Instant Claims (weight percent)	Gell et al. ('723) (weight percent)	Overlapping range
Cr	about 3 – about 12	5 – 18	5 – about 12
W	about 3 – about 10	0 – 15	about 3 – about 10
Al	about 5 – about 7	2 – 8	about 5 – about 7
Ta	about 3 – about 12	0 – 12	about 3 – 12
Hf	about 0.03 – about 0.80	0 – 3.5	about 0.03 – about 0.80
Ni	remainder	remainder	remainder

Still regarding claim 11, the claim language "up to" does not necessitate the presence of an element because "up to" would include 0 weight percent. Therefore, cobalt, molybdenum, rhenium, titanium, iron, niobium, carbon, zirconium, boron, and a rare earth element are not essential to the composition of the nickel-base superalloy according to claim 11.

Gell et al. ('723) disclose a nickel-base superalloy as shown above, but Gell et al. ('723) do not specify wherein the alloy would include an outwardly grown aluminide bondcoat and a ceramic thermal barrier coating disposed on the bondcoat wherein the life of the ceramic thermal barrier coating during cyclic oxidation would be prolonged.

Warnes et al. ('733) disclose coating a nickel based superalloy with an ceramic thermal barrier (alumina) over an outwardly grown platinum aluminide bondcoat (col. 2, lines 26-55). A nickel based alloy with a ceramic thermal barrier over an outwardly grown platinum aluminide bondcoat has higher resistance during high temperature oxidation (col. 2, lines 26-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply an outwardly grown platinum aluminide bondcoat with an alumina ceramic thermal barrier, as disclosed by Warnes et al. ('733), to the nickel-base superalloy, as disclosed by Gell et al. ('723), in order to improve resistance during high temperature oxidation, as disclosed by Warnes et al. ('733) (col. 2, lines 26-55).

The Examiner notes that the composition disclosed by Gell et al. ('723) overlaps the composition of the instant invention, which is a prima facie case of obviousness.

Art Unit: 1742

See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired amounts of chromium, tungsten, aluminum, tantalum, and hafnium from the compositions disclosed by Gell et al. ('723) because Gell et al. ('723) disclose the same utility throughout the disclosed ranges.

In regards to claim 17, Gell et al. ('723) disclose wherein the nickel-base superalloy would be used as a gas turbine blade (col. 4, lines 25-33).

Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw et al. (US 3,832,167) in view of Warnes et al. (US 5,989,733).

In regards to claim 11, Shaw et al. ('167) disclose a nickel-base superalloy (col. 1, line 48 – col. 2, line 15). The table below compares the alloy composition of Shaw et al. ('167) with that of the instant invention.

<b>Element</b>	<b>From Instant Claims (weight percent)</b>	<b>Shaw et al. ('167) (weight percent)</b>	<b>Overlapping range</b>
Cr	about 3 – about 12	2 – 20	about 3 – about 12
W	about 3 – about 10	0 – 20	about 3 – about 10
Al	about 5 – about 7	3 – 8	about 5 – about 7
Ta	about 3 – about 12	0 – 9	about 3 – 9
Hf	about 0.03 – about 0.80	0.25 – 3	0.25 – about 0.80
Ni	remainder	remainder	remainder

Still regarding claim 11, the claim language “up to” does not necessitate the presence of an element because “up to” would include 0 weight percent. Therefore, cobalt, molybdenum, rhenium, titanium, iron, niobium, carbon, zirconium, boron, and a rare earth element are not essential to the composition of the nickel-base superalloy according to claim 11.

Art Unit: 1742

Shaw et al. ('167) disclose a nickel-base superalloy as shown above, but Shaw et al. ('167) do not specify wherein the alloy would include an outwardly grown aluminide bondcoat and a ceramic thermal barrier coating disposed on the bondcoat wherein the life of the ceramic thermal barrier coating during cyclic oxidation would be prolonged.

Warnes et al. ('733) disclose coating a nickel based superalloy with an ceramic thermal barrier (alumina) over an outwardly grown platinum aluminide bondcoat (col. 2, lines 26-55). A nickel based alloy with a ceramic thermal barrier over an outwardly grown platinum aluminide bondcoat has higher resistance during high temperature oxidation (col. 2, lines 26-55).

The Examiner notes that the composition disclosed by Shaw et al. ('167) overlaps the composition of the instant invention, which is a prima facie case of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired amounts of chromium, tungsten, aluminum, tantalum, and hafnium from the compositions disclosed by Shaw et al. ('167) because Shaw et al. ('167) disclose the same utility throughout the disclosed ranges.

In regards to claim 17, Shaw et al. ('167) disclose wherein the nickel-base superalloy would be used as a turbine engine blade (col. 1, lines 23-40).

Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gell et al. (US 4,116,723) in view of Spitsberg et al. (US 6,551,423).

In regards to claim 11, Gell et al. ('723) disclose a nickel-base superalloy

Art Unit: 1742

(col. 4, line 63 – col. 5, line 6) . The table below compares the alloy composition of Gell et al. ('723) with that of the instant invention.

Element	From Instant Claims (weight percent)	Gell et al. ('723) (weight percent)	Overlapping range
Cr	about 3 – about 12	5 – 18	5 – about 12
W	about 3 – about 10	0 – 15	about 3 – about 10
Al	about 5 – about 7	2 – 8	about 5 – about 7
Ta	about 3 – about 12	0 – 12	about 3 – 12
Hf	about 0.03 – about 0.80	0 – 3.5	about 0.03 – about 0.80
Ni	remainder	remainder	remainder

Still regarding claim 11, the claim language “up to” does not necessitate the presence of an element because “up to” would include 0 weight percent. Therefore, cobalt, molybdenum, rhenium, titanium, iron, niobium, carbon, zirconium, boron, and a rare earth element are not essential to the composition of the nickel-base superalloy according to claim 11.

Gell et al. ('723) disclose a nickel-base superalloy as shown above, but Gell et al. ('723) do not specify wherein the alloy would include an outwardly grown aluminide bondcoat and a ceramic thermal barrier coating disposed on the bondcoat wherein the life of the ceramic thermal barrier coating during cyclic oxidation would be prolonged.

Spitsberg et al. ('423) disclose the deposition of a platinum aluminide layer with an aluminum oxide layer above the platinum aluminide layer to nickel-base superalloys such as Rene N5<sup>TM</sup> (col. 3, line 62 – col. 4, line 43). This coating system would be used to protect the nickel-base superalloy substrate during thermal cycling thereby prolonging spallation life. (col. 3, line 62 – col. 4, line 43).

Art Unit: 1742

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a platinum aluminide layer with an aluminum oxide layer above the platinum aluminide layer, as disclosed by Spitsberg et al. ('423), to the nickel-base superalloy, as disclosed by Gell et al. ('723), in order to protect the nickel-base superalloy substrate during thermal cycling, as disclosed by Spitsberg et al. ('423) (col. 3, line 62 – col. 4, line 43).

The Examiner notes that the composition disclosed by Gell et al. ('723) overlaps the composition of the instant invention, which is a prima facie case of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired amounts of chromium, tungsten, aluminum, tantalum, and hafnium from the compositions disclosed by Gell et al. ('723) because Gell et al. ('723) disclose the same utility throughout the disclosed ranges.

In regards to claim 17, Gell et al. ('723) disclose wherein the nickel-base superalloy would be used as a gas turbine blade (col. 4, lines 25-33). Spitsberg et al. ('423) disclose wherein the coating system would be applied to a turbine blade (col. 3, lines 49-61).

Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaw et al. (US 3,832,167) in view of Spitsberg et al. (US 6,551,423).

In regards to claim 11, Shaw et al. ('167) disclose a nickel-base superalloy (col. 1, line 48 – col. 2, line 15). The table on the following page compares the alloy composition of Shaw et al. ('167) with that of the instant invention.



Element	From Instant Claims (weight percent)	Shaw et al. ('167) (weight percent)	Overlapping range
Cr	about 3 – about 12	2 – 20	about 3 – about 12
W	about 3 – about 10	0 – 20	about 3 – about 10
Al	about 5 – about 7	3 – 8	about 5 – about 7
Ta	about 3 – about 12	0 – 9	about 3 – 9
Hf	about 0.03 – about 0.80	0.25 – 3	0.25 – about 0.80
Ni	remainder	remainder	remainder

Still regarding claim 11, the claim language “up to” does not necessitate the presence of an element because “up to” would include 0 weight percent. Therefore, cobalt, molybdenum, rhenium; titanium, iron, niobium, carbon, zirconium, boron, and a rare earth element are not essential to the composition of the nickel-base superalloy according to claim 11.

Shaw et al. ('167) disclose a nickel-base superalloy as shown above, but Shaw et al. ('167) do not specify wherein the alloy would include an outwardly grown aluminide bondcoat and a ceramic thermal barrier coating disposed on the bondcoat wherein the life of the ceramic thermal barrier coating during cyclic oxidation would be prolonged.

Spitsberg et al. ('423) disclose the deposition of a platinum aluminide layer with an aluminum oxide layer above the platinum aluminide layer to nickel-base superalloys such as Rene N5<sup>TM</sup> (col. 3, line 62 – col. 4, line 43). This coating system would be used to protect the nickel-base superalloy substrate during thermal cycling thereby prolonging spallation life. (col. 3, line 62 – col. 4, line 43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a platinum aluminide layer with an aluminum oxide layer above the platinum aluminide layer, as disclosed by Spitsberg et al. ('423),

Art Unit: 1742

to the nickel-base superalloy, as disclosed by Shaw et al. ('167), in order to protect the nickel-base superalloy substrate during thermal cycling, as disclosed by Spitsberg et al. ('423) (col. 3, line 62 – col. 4, line 43).

The Examiner notes that the composition disclosed by Shaw et al. ('167) overlaps the composition of the instant invention, which is a prima facie case of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the desired amounts of chromium, tungsten, aluminum, tantalum, and hafnium from the compositions disclosed by Shaw et al. ('167) because Shaw et al. ('167) disclose the same utility throughout the disclosed ranges.

In regards to claim 17, Shaw et al. ('167) disclose wherein the nickel-base superalloy would be used as a turbine engine blade (col. 1, lines 23-40). Spitsberg et al. ('423) disclose wherein the coating system would be applied to a turbine blade (col. 3, lines 49-61).

### ***Response to Arguments***

First, the Applicant points out that the ranges are incorrect in the table presented in the Office Action of 8 November 2006. The Examiner acknowledges that the ranges in the table are not correct, however, the ranges disclosed by Nishihata et al. ('755) do overlap that of the instant invention, the rejection still applies, and a corrected table is presented on the following page.

Art Unit: 1742

Element	From Instant Claims (weight percent)	Nishihata et al. ('755) (weight percent)	Overlapping range
Cr	3 – 12	1 – 18	3 – 12
W	3 – 10	0 – 12	3 – 10
Al	5 – 7	1.5 – 15	5 – 7
Ta	3 – 12	0 – 11	3 – 11
Hf	0.03 – 0.80	0 – 1	0.03 – 0.80
Zr	0 – 0.10	0 – 0.50	0 – 0.10
Ni	remainder	remainder	remainder

Second, the applicant argues primarily that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Weld materials oxidize like other materials. As in a turbine, a coating would be applied to the pipe, blade, etc. in addition to the weld material. A weld alloy would be made of a material that is substantially similar in composition to the pipe, blade, etc. Also, the “article” in this case is not structurally limited, as it lies in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Art Unit: 1742

Third, the Applicant primarily argues that Hf, Ta and W start with 0 weight percent and are not even required by the alloy. In response, the advantages of adding Hf, Ta, and W would be improved wettability and improved alloy creep strength [0026, 0042 and 0045], which are suggested to one of ordinary skill in Nishihata et al. ('755).

Fourth, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant

Art Unit: 1742

to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JR

  
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